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Noncompetitive Immunochemical Determination of Ribonuclease Using Transition Metal Ions and the Effect of Catalytic Hydrogen Release

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Abstract

A noncompetitive variant of immunochemical ribonuclease (RNase) determination has been developed, involving the use of Co(II) as a label. A variety of approaches to labeling the immunological reagent with the metal have been assessed. In the variant proposed, catalytic hydrogen release is used as a means of detecting the label, the amount of which is proportional to the RNase concentration. Conditions making it possible to record catalytic hydrogen release currents have been determined. In the presence of RNase, the electrocatalytic effect is maximum at a concentration of Co(II) in ammoniac buffer equal to 2 × 10-4 M (pH 10.0). The dependence is linear in the RNase concentration range 2000-4 ng/ml (threshold concentration, 2 ng/ml).

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